

A Squint-eye View of the Development of Syntactic Theories in Recent Years*

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Syntax is the study of sentences as a method of communication. As a student of syntax, one is concerned not only about the formal construction of a well-formed sentence, but also, more importantly, about the way of mapping a given well-formed sentence to the corresponding meaning. The definition of a well-formed sentence *per se* in a given language is a necessary but rather trivial portion of the syntax of that language, especially because, as we will see, the definition is largely based on the mapping aspect of syntax.

By way of illustration, let us consider some of the factors which bring about the meaning differences between any given two sentences. The sentences *a* and *b* in (1) differ in meaning. But what causes the difference?

1. a. Bonnie's house continued to burn.
- b. Bonnie got a beautiful sun tan.

Of course, THE DIFFERENT LEXICAL ITEMS(or WORDS) that constitute the sentences are responsible.

The sentences in (2) have the identical set of lexical items but still differ in meaning from each other.

2. a. Jerry didn't beat Joan at any time.
- b. Joan didn't beat Jerry at any time.

Obviously, THE DIFFERENT ORDER OF THE CONSTITUENTS can create a meaning difference even when the sentences have exactly the same set of constituents.

Now, consider the often mistranslated Bible sentences in (3). They have the identical constituents in the same order. The same is true with the sentences in (4).

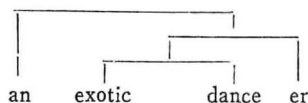
3. a. Truly I tell you today, you will be with me in paradise.
- b. Truly I tell you, today you will be with me in paradise.

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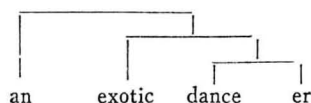
4. a. Horace has married *an exotic dancer* (=a girl who dances an exotic dance.)
 b. Horace has married *an exotic dancer* (=a dancer who is exotic.)

In (3), although both sentences contain the same set of lexical items in the identical order, the word 'today' belongs to different constituent sentences as is reflected by the punctuation. In other words, the different constituent structures lead to a meaning difference. The structural difference of the underlined part of the sentences in (4) may probably best be revealed by the following phrase structure diagrams.

4' a.



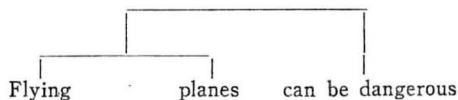
b.



However, the identity in lexical items, their order, and their constituent structures between any given two sentences does not seem to guarantee the synonymy between those sentences. Thus consider the by now well-known Chomsky sentence with two typical readings (or meanings).

5. a. Flying planes can be dangerous. (=Planes which are flying can be dangerous.)
 b. Flying planes can be dangerous. (=To fly planes can be dangerous.)

c.



The two sentences are homophonous, that is, share the lexical items in the identical order. The IC analysis (5c) given for both readings shows the identity of the constituent structure. Then where does the meaning difference come from? Any person who is familiar with traditional grammar will describe the difference as the different relations that obtain between the two words in the subject noun phrase (NP): in *a*, *flying* modifies *planes*, whereas in *b*, *planes* is the object of *flying*. The taxonomic IC analysis was blind to such relations between constituents.¹ This is one of the things that led Chomsky and other

¹ One exception to this statement is the tagmemic theory. In this theory, tagmeme, which is the basic unit of a construction, was defined in terms of substitutability, more specifically as the correlation of a grammatical function with a class of mutually substitutable items fulfilling that function or *slot*. The meaning difference between 5a and b may be explained in terms of different slots. But the tagmemic theory did not go too far beyond the level of pure IC analysis. Consider the following:

1. a. Mike decided on the boat (simply because he couldn't stand the airplane.)
 b. Mike decided on the boat, (but it was too late, he couldn't turn the course of the boat.)

Thus, Chomsky in his book *Aspects of the Theory of Syntax* supplies us with a model of an ideal phrase structure rule (pp. 106-9). The relevant portion of it is quoted below for the convenience of the readers.

- Tagmemic theory cannot capture the meaning difference here, but Chomsky's *Aspects* grammar will assign different deep structures shown below.

The image displays two syntax trees for the sentence "Milton decided to go on the boat".

Top Syntax Tree:

- S** (Sentence) branches into **NP** (Noun Phrase) and **PREDICATE PHRASE**.
 - NP** branches into **N** (Noun), which is **Milton**.
 - PREDICATE PHRASE** branches into **AUX** (Auxiliary), **TENSE**, **VP** (Verb Phrase), and **PLACE**.
 - AUX** branches into **TENSE**, which is **PAST**.
 - VP** branches into **V** (Verb), which is **decide**.
 - PLACE** branches into a box containing **on the boat**.

Bottom Syntax Tree:

- S** (Sentence) branches into **NP** (Noun Phrase) and **PREDICATE PHRASE**.
 - NP** branches into **N** (Noun), which is **Mike**.
 - PREDICATE PHRASE** branches into **AUX** (Auxiliary), **TENSE**, **VP** (Verb Phrase), and **PREP PHRASE (PLACE)**.
 - AUX** branches into **TENSE**, which is **PAST**.
 - VP** branches into **V** (Verb), which is **decide**, and **PREP PHRASE (PLACE)**.
 - PREP PHRASE (PLACE)** branches into a box containing **on the boat**.

Notice the different places to which the category PLACE is assigned. For the discussion of some motives of such differentiation, see Chomsky 1965, pp. 90-106. Whereas it might be claimed that such revision as could meet the above objection within the tagmemic theory, this theory carries the fate of finite phrase structure grammars. It is text-oriented, and cannot explain the generativity of human language. For the discussion of generativity requirement of a grammar, see Chomsky 1965, pp. 3-9 and 15-27.

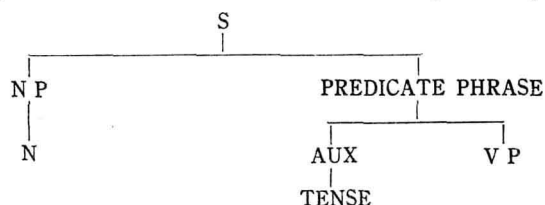
iv. Predicate \rightarrow { Adjective
(like) Predicate-Nominal }

v. Prep-Phrase \rightarrow Direction, Duration, Place, Frequency, etc.

vii. NP \rightarrow (Det)N (S)²

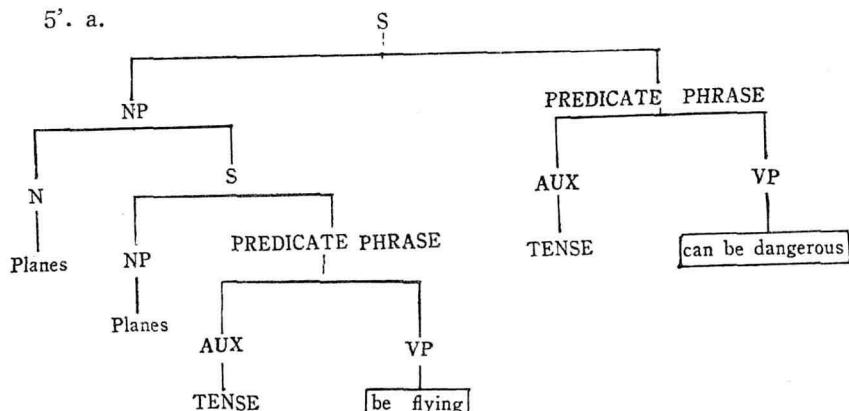
xvi. Aux \rightarrow Tense (M) (Aspect)

These rules are rewrite rules which define a construction in terms of its constituents. Category nodes in parentheses are optional, whereas all the others are obligatory. By rule 6i, then, any sentence will have NP and Predicate-Phrase. According to 6ii, any Predicate Phrase will have at least Aux and VP. According to 6vii, all NP's must have an N as a constituent. Thus, all sentences will share the following initial phrase structure:

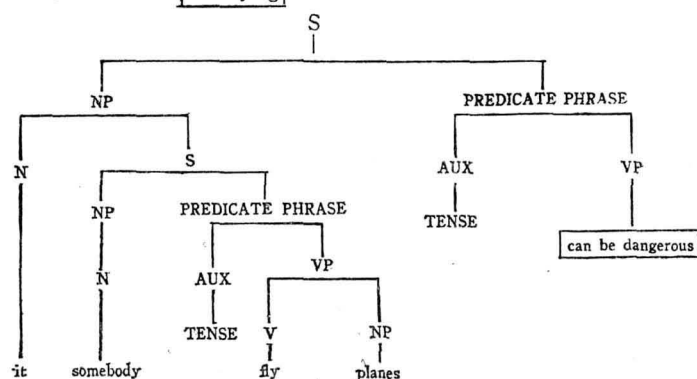


In this approach, 5a and 5b would have roughly the following deep structures:

5'. a.



5'. b.



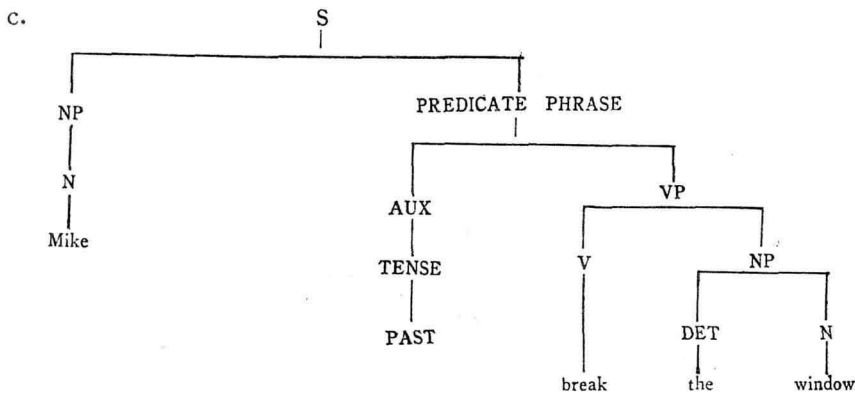
² Because of the abolition of so-called "generalized transformation" (Chomsky 1957) as proposed in Chomsky (1965 : 133), we change *s'* to *s* for the present purpose.

The meaning difference between 5a and 5b could thus be attributed to the DIFFERENCE IN THE CONSTITUENT LEXICAL ITEMS AND THEIR STRUCTURES AT THE DEEP STRUCTURAL LEVEL. And then the transformation of these structures to the conversational (surface) sentences is made by transformational rules.

The next question we would like to ask is whether or not any two sentences which are identical to each other with respect to all the factors we discussed so far are necessarily synonymous. Let us consider the following sentence.

7. a. Milton broke the window. (He did it with a gun butt.)

b. Milton broke the window. (Actually, Tom broke it by pushing Milton into it.)



In the *a* reading, Milton is the responsible agent for breaking the window, whereas in the *b* reading, Milton is merely an instrument used by Tom in breaking the window. But in spite of such apparent meaning discrepancies, the sentences *a* and *b* in 7 are homophonous and share the deep structure in Chomskian theory, as the shared diagram (7c) shows.

Naturally, we find ourselves asking what is responsible for creating such meaning discrepancies. An obvious suggestion is that, despite claims by earlier theoreticians, Chomskian deep structure does not really provide all the crucial information for the semantic interpretation. The deep structure, the suggestion goes, must be still deeper and supply more cues for semantic interpretation than just the phrase structures in terms of recursive phrase structure rules and the meanings of each lexical item. Case grammar proposed by Fillmore is one typical example. Fillmore suggests, in his own words, that linguists abandon "a conception of syntax that restricts itself to categories and sequences in favor of a conception of syntax-semantics that is based on a theory of the essential ways in which aspects of linguistically codable experiences are relatable to each other and to the experience as a whole." More specifically, Fillmore believes that "the elementary structure

of the 'propositional' core of simple sentences" could be understood in terms of a small number of types of relationship between a V(or predicate in the sense of traditional logic) and its noun clausemates (or arguments). He further claims that these relation types are identifiable with familiar elementary everyday judgments such as those about who does something (Agent), who experiences something (Experiencer), what is used as an instrument (Instrument), where something happens (Place), what it is that changes (Object), where it starts (Source), and where it ends up (Goal).

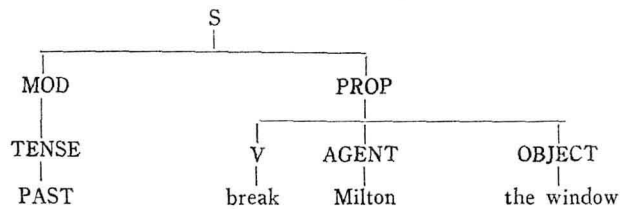
Brushing aside such "baffling" elements as tenses, modals, quantifiers, and adverbs into the wastebasket he calls Mcd (ality), Fillmore offers the following deep structure rules which are deeper than Chomsky's.

8. i. $S \rightarrow \text{Mod Prop(osition)}$

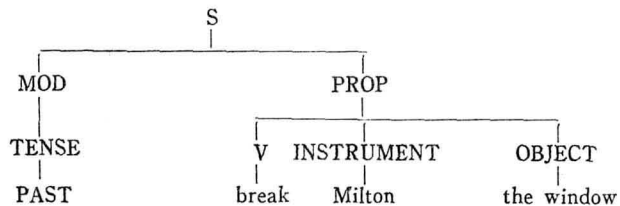
ii. $\text{Prop} \rightarrow \text{V Agent Experiencer Instrument Object Source Goal Location Time}$

For the details and theoretical implications of this theory, see Fillmore 1968 and 1971. According to this theory, 7a and b have different deep structures, which in turn explains the meaning differences.

7'. a.



b.



This theory explains the meaning difference between 7a and b in terms of DIFFERENT DEEP STRUCTURAL CASE the functional node of an argument (NP) to the predicate (V) of a proposition (S).

Once we admit that the arbitrary "deep structure" level proposed by Chomsky is not a justifiable, motivated level in linguistic analysis, we are cut loose, as it were. The sentences in 9, for instance, are all homophonous, and no matter how cases are assigned to NP's in a sentence, these sentences share the deep structure, as is shown by the approximated deep structure 9d. However, the sentences in 9 are at least three ways

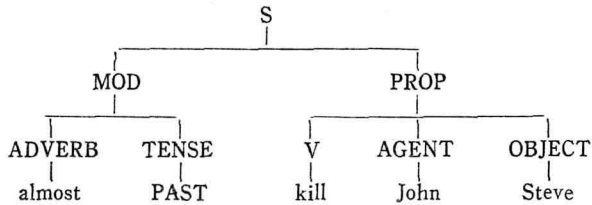
ambiguous, as is shown by the McCawley 1972b.

9. a. John almost killed Steve. (John almost did something that would have killed Steve.)

b. John almost killed Steve. (John did something that came close to causing Steve to die.)

c. John almost killed Steve. (John did something that brought Steve close to death.)

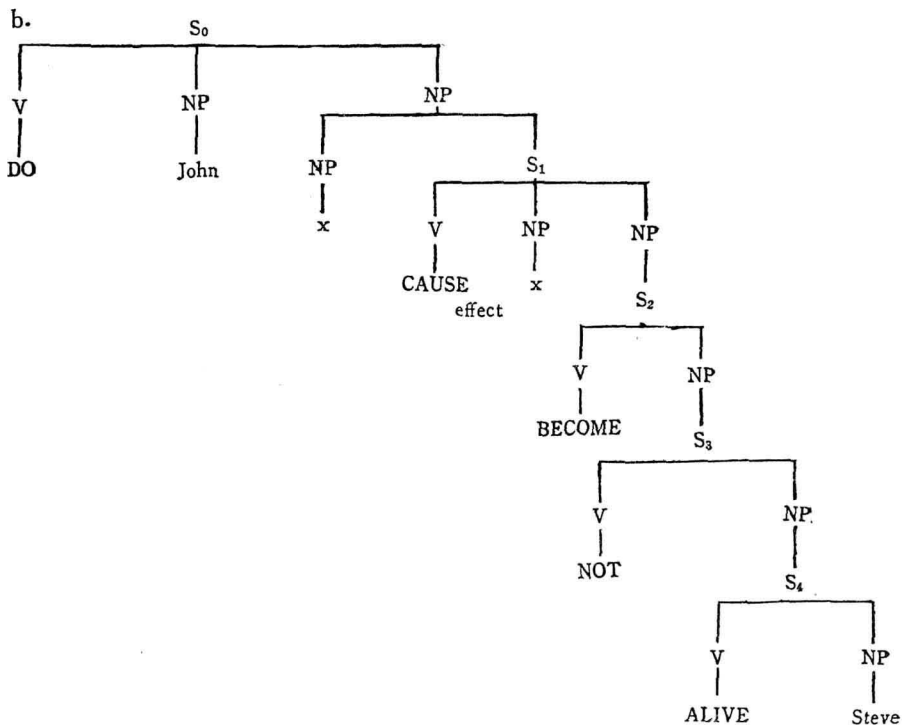
d.



In *a* reading, John did not actually perform an act that would have killed Steve. In *b* reading, John did perform an act which could have caused Steve to die, but which actually did not. In *c* reading, John did perform an act which did affect Steve's condition, although it did not quite lead to Steve's death.

We see here that even the one step deeper "deep structure" proposed by Fillmore, as it stands at present, does not offer an adequate mapping device between a well-formed sentence and the correct meaning. Still deeper deep structure has been suggested. More specifically, according to the suggestion which claims that traditional logic structure is a very close approximation of the deep structure, not all lexical items are atomic, unanalyzable wholes. Each lexical item stands for some semantic concept. Nor all such concepts that are represented by the phonetic form of lexical items on a linguistic level are elementary in the sense that no further conceptual analysis is possible. In other words, there are concepts which are complex and thus definable in terms of other elementary concepts that may or may not have actual linguistic forms representing them. (Morgan 1968, and McCawley 1968). Thus, as a typical example of such an approach, McCawley (1972a) suggests the deep structure 10b for the sentence 10a.

10. a. John killed Steve.



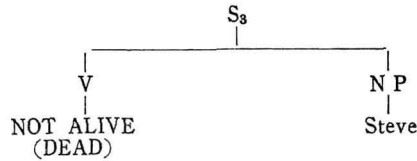
All the verbs on the tree here are capitalized to show that they are meant to be actual concepts, not the English lexical items *do*, *cause*, etc. The readers are referred to McCawley 1970 for a discussion of basic S constituent order.

Leaving the details aside for later discussion, we will concentrate here on the direct impact of such an approach on the issue of explainability of meaning difference in natural terms. 10b may be transformed into either 10a, or one of the following sentences, or possibly still other surface sentences, assuming that all V's are in the past tense.

11. a. John did something that caused Steve to come to be *not alive*.
- b. John did something that caused Steve to *become dead*.
- c. John did something that *caused* Steve to *die*.
- d. John *did something that killed* Steve.

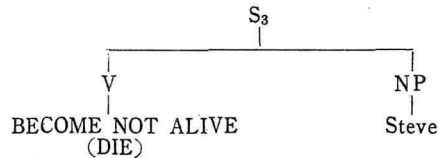
The process that achieves such transformations is known as PREDICATE RAISING (PRED RAISE). Let us take S_3 and S_4 for an example. PRED RAISE forms a complex concept *DEAD* by raising V of S_4 (ALIVE) to S_3 level, resulting in the following structure.

11'. b.



If we apply PRED RAISE once again to S_2 and 11'b, then we get 11'c.

11'. c.

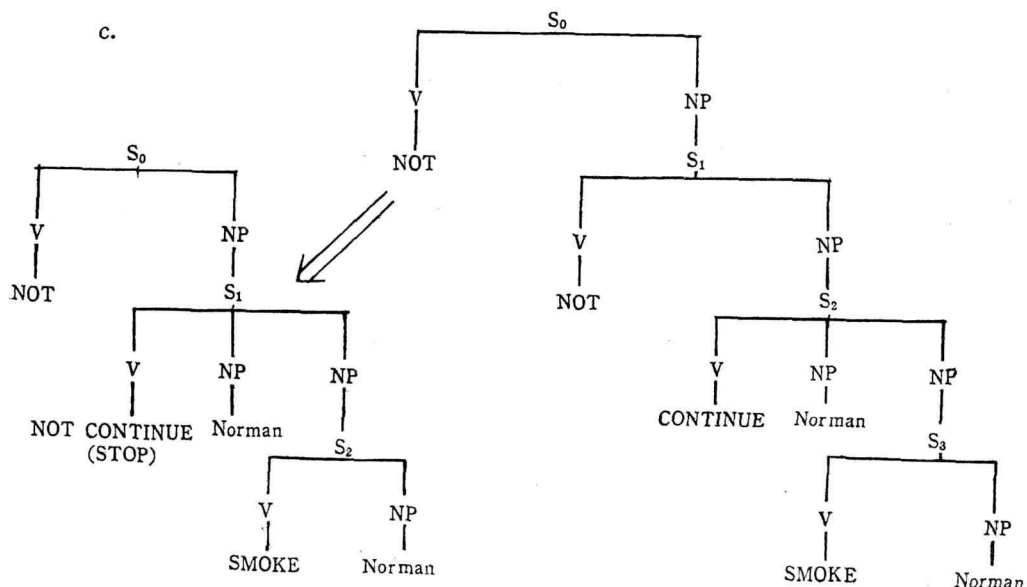


Returning to the cause of meaning discrepancies in 9, we note that degree adverbs like *almost* can modify each elementary concept (V) on the tree (10a). In 9a, the adverb modifies the verb of S_0 ; in 9b, that of S_1 ; in 9c, that of S_3 . For some discussion of other possible modifications (i.e. those of S_2 and S_4), the readers are referred to McCawley 1972b.

We have been discussing constituent lexical items, their order, their IC structure, their phrase structure, their case structure and their conceptual structure as crucial factors that bring about meaning differences between sentences. Notice that each factor is properly included in the succeeding factor. Thus, if one knows the IC structure of a sentence, then the constituent lexical items and their linear order are automatically accounted for. If the phrase structure is known, the IC structure is also known. Fillmorean grammar accounts for most of the interesting things Chomsky's grammar does. Finally Generative Semantics Grammar (with conceptual structure as the deep structure) seems to account for all the things that Fillmorean grammar describes.

Now, suppose some two sentences are not distinct with respect to any of these factors, can they still differ in meaning?

12. a. Norman did not stop smoking. (I just caught him smoking again.)
- b. Norman did not stop smoking. (In fact, he has never smoked all his life.)



12a and b obviously have different meanings, but are once again homophonous, share Chomskian and Fillmorean deep structures, and even the conceptual structures as shown by the diagrams (12c). This seems to indicate that we need at least one more thing to be able to define adequately the way of mapping any well-formed sentence to the corresponding meaning.

Recently, linguists have become increasingly more concerned about the two different meaning levels expressed or implied by a sentence: assertion and presupposition. For instance, in uttering the *a* sentences of 13-16, the speaker does not have to make any commitment as to the truth value of the embedded sentences, whereas in uttering *b* sentences the speaker not only has the commitment as to the truth (13-15) or falsity (16) of the embedded sentence, but usually also expect that the hearer makes the same commitment.

13. a. It is likely that Keith missed the meeting.

b. It is odd that Keith missed the meeting.

14. a. Irwin believed that Mrs. Wilson passed away.

b. Irwin regretted that Mrs. Wilson passed away.

15. a. Don wanted Bonnie to get married.

b. Don forced Bonnie to get married.

16. a. Diane claimed that she had poison ivy.

b. Diane pretended that she had poison ivy.

The speaker of 13b presupposes that Keith did not attend the meeting, and asserts that it is not a usual thing. The speaker of 14b presupposes that Mrs. Wilson died, and asserts that Irwin feels bad about it. The speaker of 15b presupposes that Bonnie did not want to get married, and asserts that Don made her do so against her own will. Finally the speaker of 16b presupposes that Diane did not have poison ivy, and asserts that she made believe that she did.

The tests that linguists have used to identify the presupposed meaning of a sentence are negation, questioning, commanding, and *too phrase* possibility. Thus, compare the sentences 17-20.

17. a. Irwin did not believe that Mrs. Wilson passed away.
b. Irwin did not regret that Mrs. Wilson passed away.
18. a. Did Irwin believe that Mrs. Wilson passed away?
b. Did Irwin regret that Mrs. Wilson passed away?
19. a. Let Irwin believe that Mrs. Wilson passed away.
b. Let Irwin regret that Mrs. Wilson passed away.
20. a. Don forced Bonnie to get married and he made Sandy do so too.
b. Don forced Bonnie to get married and Sandy didn't want to either.

The fact that the speaker's commitment stays constant under negation, question, and command seems to indicate that these processes operate only on the asserted meaning and leave the presupposed meaning unaffected. Thus, regardless of the illocutionary force used, the speakers of 17b, 18b, and 19b share the presupposition that Mrs. Wilson in fact passed away. Additionally, the sentences in 20 show that in an S_1 and S_2 *too* construction, S_2 corresponds only to the assertion of S_1 but never to its presupposition, as shown by the ungrammaticality of 20b.

With regard to the negation test, however, there is some further complexity, as discussed by some scholars (Karttunen 1973, Givón 1972, and Herzberger 1971). The fact is that presupposition is not always immune to negation. This is well illustrated in 21.

21. a. The king of France is bald.
b. The king of France is not bald.
c. The statement that the king of France is bald is not true.

21a presupposes that France has one and only one king, and asserts that he is bald. In 21b in which only the verb is in the scope of negation, presupposition is not affected.

However, in 21c in which the whole sentence is in the scope of negation, either the assertion or the presupposition may be negated. Following the current usage of the terms, we will call the negation that affects only the assertion INTERNAL NEGATION (21b), as opposed to EXTERNAL NEGATION (21c) which affects the whole sentence.

Now we are ready to discuss the source of the meaning difference in 12. In uttering sentence 22, which is the affirmative counterpart

22. Norman stopped smoking.

of the sentences in 12, the speaker presupposes that Norman smoked before and asserts that he ceased to do so. The meaning difference in 12, then, is a matter of what meaning component is being negated—more specifically, whether it is only the assertion or the whole sentence that is being negated. Usually externally negated sentences carry extra heavy accents on the lexical item which carries presuppositions (in the example 12b, the word ‘stop’).

12. b. Norman did not stop smoking.

We have discussed some of the things that are essential in the interpretation of a sentence: the lexical items which represent elementary or complex concepts, their orders, their IC analyses, phrase structures, case structures, conceptual structures, and assertion-presupposition distinction. However, we are not claiming in any sense that this is either a necessary or a sufficient set of the factors that constitute the meaning of a sentence. We have already mentioned that each factor is properly included in the succeeding factor. To see how the above is not a sufficient set, consider the following:

23. a. The room is awfully hot. (Didn't you hear? I said the room is hot.)

b. The room is awfully hot. (Maybe it is because it has a tin roof.)

The speaker of 23a utters the sentence as a request to open the windows of the room, whereas the speaker of 23b makes the mere assertion that the room is hot. What do we need to account for such a meaning difference? We will not discuss this question here not only because the nature and boundary of presupposition is not exactly clear at this point but also because the formulation of such information is well beyond the horizon at the present moment (see Gordon and Lakoff 1971).

Attempts have been made to show that the study of syntax involves the way of mapping a given well-formed sentence on the corresponding meaning as well as the definition of a well-formed sentence. This paper is meant to show where the study of syntax stands at this moment by revealing what sort of things are considered to be:

contributory to the meaning of a sentence.

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